K&F NOMOS LS

User's Manual

Revison 4.0
Released: 28.10.2011

Important Information, Please Read Before Use!

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KLING & FREITAG
SOUND SYSTEMS

Table of contents

1	**Introduction**	**4**
1.1	Symbols in User's Manual	4
1.2	Information about this User's Manual	4
2	**Product Description**	**5**
2.1	Scope of Delivery	5
2.2	System Requirements	5
2.3	Overview of Components	6
2.4	Accessories	7
3	**Safety Instructions**	**8**
3.1	Mounting the Speakers / Wall and Ceiling Installation	8
3.2	Notes for Mounting the Speakers	8
3.3	Instructions for Speaker Stacking	8
3.4	Preventing hearing damage	9
3.5	Protecting the Speakers / Operating Safety	9
4	**Suspending the Speakers**	**11**
4.1	Securing the Speakers (Secondary Safety Device)	11
5	**Fuse in the NOMOS LS**	**12**
5.1	Replacing the Fuses	12
6	**Configuration and Connecting Diagram**	**13**
6.1	NOMOS LS combined with other K&F tops.	13
6.1.1	Combination with Top Speakers in 2-Channel Mode	13
6.1.2	Combination with Top Speakers in 1-Channel Mode	14
6.2	Cardioid Arrays with NOMOS LS	15
6.2.1	Setup instructions for a cardioid array	15
6.2.2	LSBlocks (Controller CD 44) for cardioid use	16
7	**Transport and Storage**	**17**
8	**Maintenance and Care**	**17**
9	**Technical Specifications**	**18**
10	**Measuring diagrams**	**19**
11	**Dimensions NOMOS LS**	**20**
12	**Disposal**	**21**
12.1	Regulations for Disposal	21
12.1.1	Germany	21
12.1.2	EU, Norway, Iceland, and Liechtenstein	21
12.1.3	All other Countries	21

1. Introduction

Thank you for your decision to buy a KLING & FREITAG product. To guarantee a trouble-free operating of the equipment and to allow your KLING & FREITAG NOMOS LS system to achieve its full potential please read the operating instructions carefully before use. With the purchase of a NOMOS LS, you have acquired a large sound system with the highest possible quality and performance capabilities. As the owner of a NOMOS LS loudspeaker, you now have a versatile and highly professional tool which, when operated properly, is a true pleasure to use.

1.1 Symbols in User's Manual

Warning

This symbol indicates the possibility of life-threatening danger and a health risk for persons. Not following these instructions may result in serious health problems including potentially fatal injuries.

Caution

This symbol indicates a possibly dangerous situation. Not following these instructions may cause minor injuries or cause property damage.

This symbol gives instructions for the proper use of the described products. Not following these instructions may cause malfunctions or property damage.

Tip

This symbol indicates notes that help you to handle the described products easier.

1.2 Information about this User's Manual

© Kling & Freitag GmbH, all rights reserved.

All specifications in this manual are based on information available at the time of publishing for the features and safety guidelines of the described products.

Technical specifications, measurements, weights and properties are not guaranteed.

The manufacturer reserves the right to make product alterations within legal provisions as well as changes to improve product quality.

All persons who use the speaker system must have this guide and all further information for safe operations available to them during assembly, disassembly, and use. The speaker system may neither be set up nor used until this manual has been read, understood and kept readily available on site.

We appreciate any input with suggestions and improvements for this manual. Please send this to us at the following address:

info@kling-freitag.de or to:

KLING & FREITAG GMBH Junkersstr.14 D-30179 Hannover.

Phone +49 (0) 511 96 99 70, Fax +49 (0) 511 67 37 94.

2. Product Description

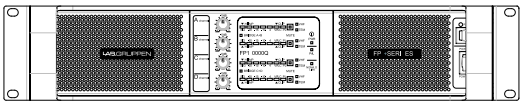
2.1 Scope of Delivery

- Subwoofer NOMOS LS
- User's Manual

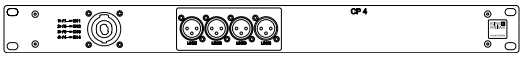
2.2 System Requirements

K&F CD 44 Digital System Controller

LAB.GRUPPEN FP 10000Q:

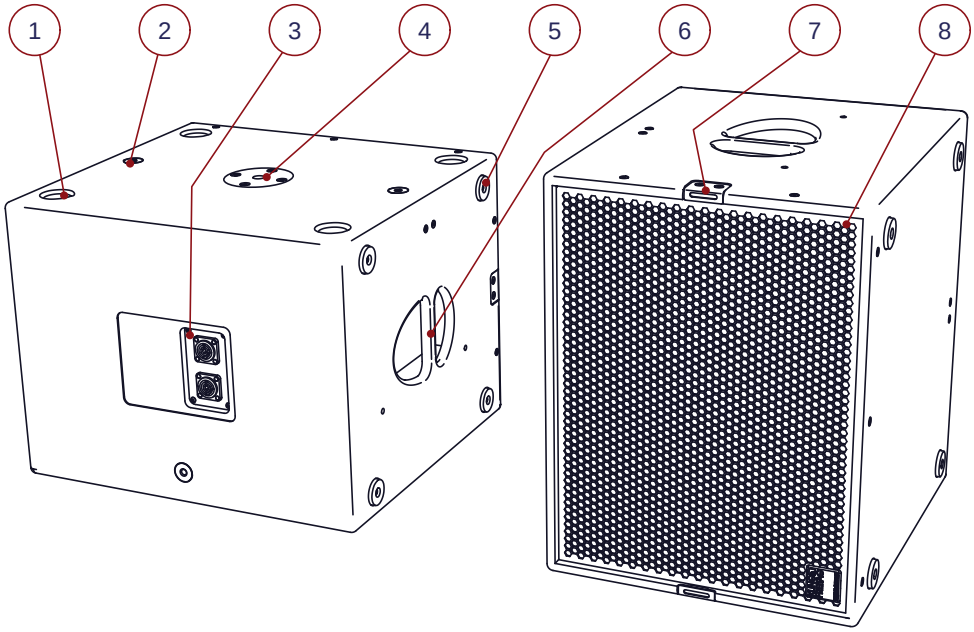


Connector Panel CP 4



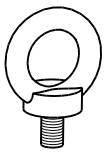
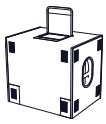
These components will be referred to as 'K&F SystemRack' in this manual.

2.3 Overview of Components



1. **4 x Stacking grooves** on top of the enclosure, for stackings of identical enclosures
2. **3 x flying and securing point K&F 'VariPoint'** Enables flying by using either the 'K&F Lifting Pin' or standard M10 threads.
3. **2 x Speakon connector** 4-pin NLT4MP (parallel)
4. **Threaded stand flange** with M20 threads for use with distance rod.
5. **8 x rubber foot** 4 x on the side, 4 x on the bottom.
6. **2 x handle**
7. **locking profiles for optional transport cover**
8. **Front grille**

2.4 Accessories

K&F 'Lifting Pin'	
M10 x 17 Eyebolt	
Protective cover NOMOS LS	
Distance rod 337	
Transport Cover NOMOS LS	

3. Safety Instructions

3.1 Mounting the Speakers / Wall and Ceiling Installation

Warning

The speakers may only be mounted by qualified event technicians or personnel which are instructed by them, adequately. This also applies for wall and ceiling fixations.

The technicians responsible for assembling the speakers on site are responsible for the safe setup and use of the speakers and guarantee this.

Never use signal cables or power cords for suspending, aligning or securing the systems.

Before carrying through ceiling and wall installations, it is essential to consider the load capacity of walls, ceilings and panelling as well as the stability and type of the construction. If there is wall panelling, for example, it is then necessary to examine the solidity of the wall and use the appropriate wall plugs.

Note that the suspension points on the hall ceiling (i.e. shackles, suspension points, or chain points) must comply with the accident prevention regulation BGV C1 (Event and Production Sites for Stage Presentations) or comparable applicable national standards, and the total load must be approved by an authorised expert.

Make sure to comply with the stipulated tightening torques.

If not otherwise stated in this manual, only original KLING & FREITAG parts may be used for mounting the speakers. The use of other parts - in particular parts by other manufacturers - is not permitted in this case.

Ensure that all installation connections comply with the applicable safety guidelines and that the size and strength are sufficient.

Ensure that all connections are secured against coming loose and that only authorized, statically tested and correctly sized supports, mounting equipment, wire ropes and chains are used.

As a basic principle, you must visually inspect all safety-relevant components of the speaker and the accessory before every use. If there are signs of wear, cracks, or deformation, then you must replace the parts immediately. The visual inspection also includes checking the screwed connections on supporting elements.

The information described here does not relieve the user of the duty to follow the given safety requirements and legal regulations.

3.2 Notes for Mounting the Speakers

Warning

Mount the speakers securely. To avoid injury or damage, always be sure to mount the speakers securely so that they do not fall.

Please note that speakers can move as a result of vibrations. To prevent them from falling from their mounted position, they must be secured properly.

When laying out the connecting cables, make sure that nobody can trip.

3.3 Instructions for Speaker Stacking

Warning

Falling speakers pose the threat of fatal injuries to people near them!

Be sure to follow the relevant national specifications, norms, and safety regulations.

Always make sure that a sufficient safety level is still given, even when outside forces have an additional impact on the stacked speakers. Before setup, carefully ascertain if there are any possible outside forces that could result in the array falling over. (Slant of the ground / the bearing capacity of the ground / wind / person or vehicle impact, etc.). A technical expert who is responsible for the setup must evaluate and determine necessary measures (including calculating the statics). If necessary, obtain expert proof of stability.

Stacked systems may not fall over even if they are inclined by 10° in each direction. If this requirement is not fulfilled, then it is necessary to take steps to achieve compliance. Possible measures include strapping it to an appropriate base structure or fastening it using safety straps. A planned tilt of the loudspeakers ist not permissible. In calculations, the tilted setup serves the purpose of levelling out unevenness.

With the set-up systems for which you cannot verify the structural safety without safeguards, you must secure them to prevent sliding or tipping in order to provide proof of this safety. To secure the system from tipping over, use water tanks or floor bolts. Other possible measures include strapping it to a suitable substructure or tying it using safety straps.

For outdoor and trade fair venues in which wind loads must be considered, additional proof of stability is necessary.

Make sure that the stacking feet of subwoofers stacked on top of one another are securely positioned in the grooves of the lower speaker.

If you place a top speaker on a NOMOS LS you must always strap the speakers to one another and secure them from falling over.

3.4 Preventing hearing damage

Caution

Avoid beeing too close to operating speakers. This equipment is capable of delivering sound pressure levels in excess of 90 dB/SPL, which may cause permanent hearing damage.

3.5 Protecting the Speakers / Operating Safety

Notice

NOMOS LS speakers may only be used in combination with a K&F SystemRack.

In general, audio signals must not be overdriven. This may be caused by mixing consoles, equalizers, effect equipment, etc. and should be indicated on this equipment. When a power amplifier is overloaded at the output (clipping), then the amplifier activates a clipping warning signal. In any case, the signal must be reduced as soon as it sounds unnaturally distorted.

For damage caused by

- overloading the speakers
- using the speakers without K&F SystemRack

we do not assume warranty and excludes liability for possible consequential damage.

The following signals may damage the speakers:

- permanent high-level signals with high frequency and continuous noise from feedback.
- permanently distorted high-level signals.
- noises, which occur when the amplifier is on while equipment is being con-nected, disconnected or switched on.

Do not install devices in any of the following places:

- where the devices are permanently exposed to direct sunlight.
- where the devices are exposed to high moisture or rain.
- where the devices are exposed to strong vibrations and dust.

Damage caused by the speakers' magnetic fields

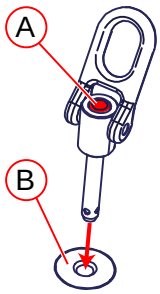
Speakers are permanently surrounded by a magnetic field, even when they are not connected. Therefore, during transport and placement of the speakers, it is important to ensure that there is always approx. 1 m between the speakers and magnetic data media and computer/video monitors.

4. Suspending the Speakers

By using the K&F 'Lifting Pin' or the M10 x 17 eyebolts available as optional accessories from Kling & Freitag, you can fly the speaker.

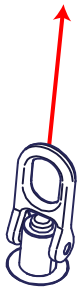
Warning

1.



Push the release button [A] and completely insert the lifting pin into the flying point [B].

2.



Let go of the release button [...] when you have completely inserted the bolt so that the release button [...] pops back up. Ensure that you cannot pull out the lifting pin any more.

4.1 Securing the Speakers (Secondary Safety Device)

The flying and securing point K&F 'VariPoint' and the K&F Lifting Pin are suitable for securing a secondary safety device according to the German safety regulations BGV C1.

Safety rope with rope damper by the brand 'Major Saveking®'

wire length	wire diameter	max. falling height
0.6m or 1m	4mm	0.2m

5. Fuse in the NOMOS LS

To increase the operating safety of the NOMOS LS, the subwoofer is equipped with fuses at the signal input mounted on the crossover. This fuse reduces the risk of consequential damage resulting from a short circuit (i.e. charred cables / connectors / fire damage).

5.1 Replacing the Fuses

Notice

When the fuse is burned out, then the chassis is most likely already ruined, as the fuse just prevents consequential damage resulting from a short circuit of the chassis. A replacement of the chassis is, therefore, unavoidable.

Required tools:

1. 3 mm Allen key for loosening the front grille
2. 3 mm Allen key for loosening the chassis

Instructions:

1. Remove the front grille.
2. Remove the speaker chassis.
3. Replace the fuse.

   The fuse holder is mounted on the internal crossover.

   Replace the fuse with the following original fuse only:
   Bussmann S 506-8A
4. Insert the (replacement) chassis.

   First loosely fasten the screws for the chassis diagonal from one another, then tighten them. By tightening the screws diagonally in two steps, a deformation of the chassis and thus a possible de-centring of the voice coil can be avoided.
5. Mount the front grille.

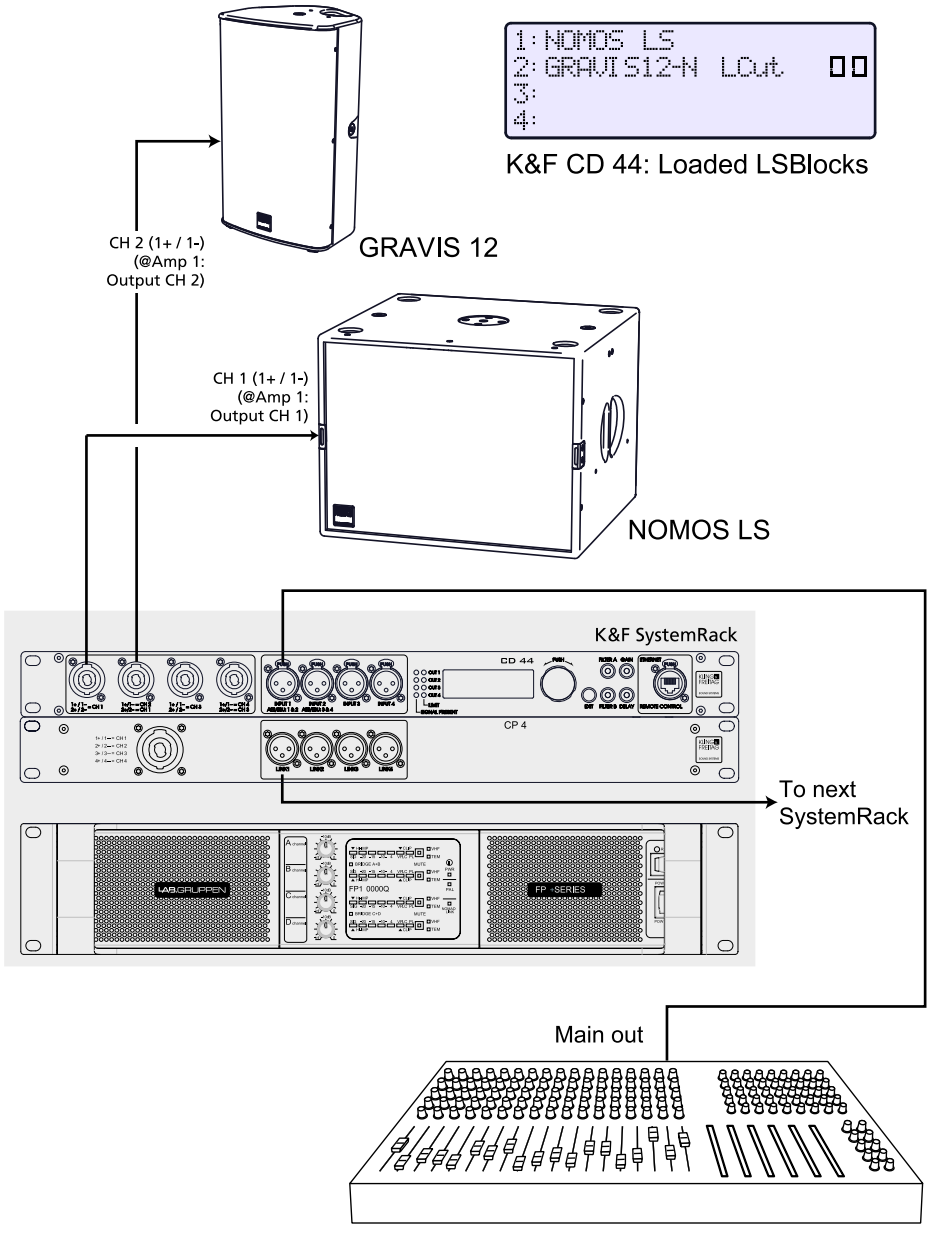
6. Configuration and Connecting Diagram

6.1 NOMOS LS combined with other K&F tops.

6.1.1 Combination with Top Speakers in 2-Channel Mode

In 2 channel mode the NOMOS LS can be combined with all K&F top speakers using the Controller CD 44.

To do so, select the desired LS blocks for the top in the Controller CD 44, and combine these with the desired LS block for the NOMOS LS.



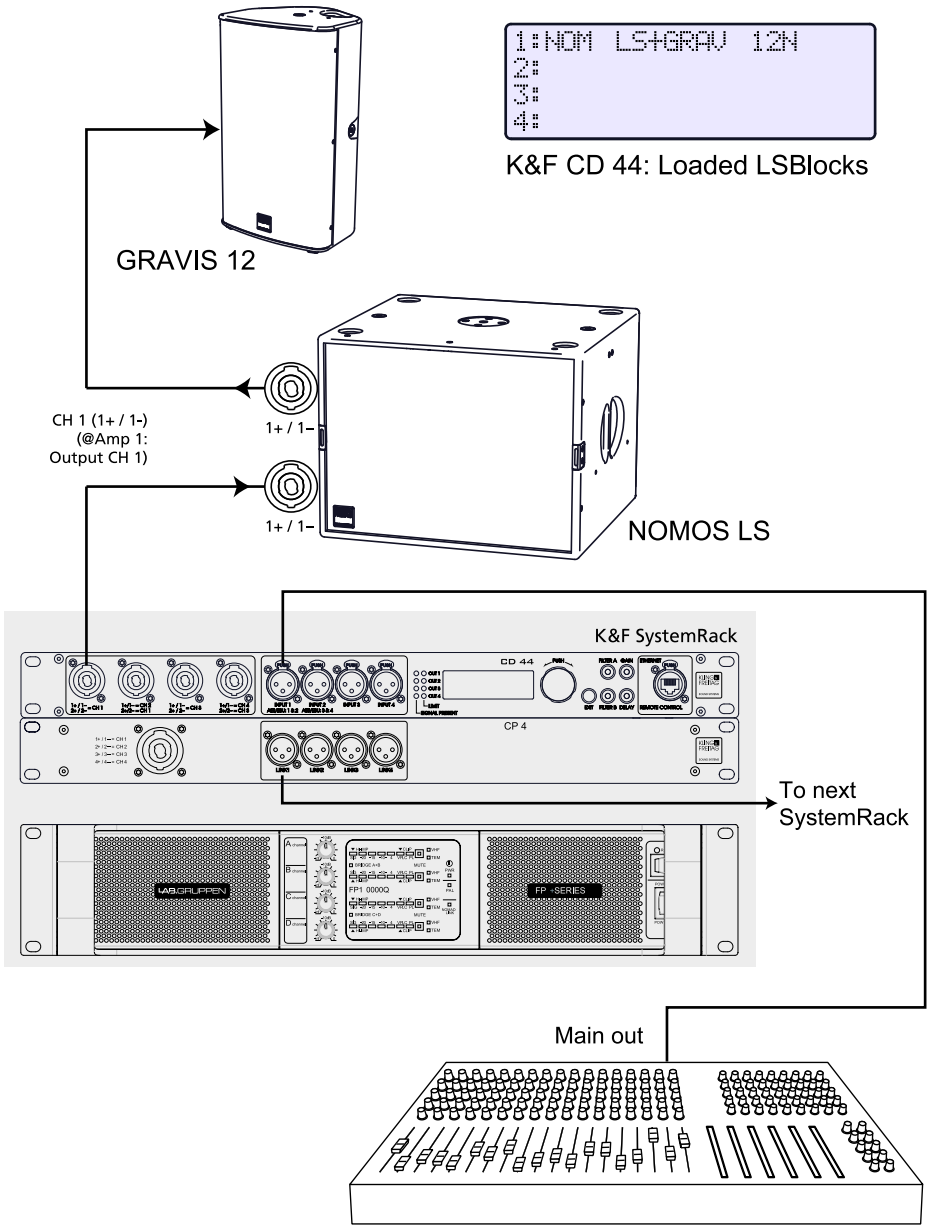
Tip

The 2-channel mode guarantees best sound quality and performance

6.1.2 Combination with Top Speakers in 1-Channel Mode

If you wish to operate the NOMOS LS with a top speaker on a single output channel of the Controller CD 44, it is possible to do so with the following tops:

NOMOS LS combined with...	Selected LSBlock (Controller CD 44)
GRAVIS 12 N	NOM LS+GRAV 12N
GRAVIS 12 W	NOM LS+GRAV 12W
SCENA 15	NOM LS+SCENA 15
PASSIO	NOM LS+PASSIO



Tip

Depending on the top used, you must make allowances in 1-channel operations for more or less significant volume losses as compared to 2-channel operations.

6.2 Cardioid Arrays with NOMOS LS

The subwoofer NOMOS LS is designed so that it can be used as a cardioid system in an array of three subwoofers, or in multiples of three.

A cardioid array results in an increase of sound pressure towards the front because of the rear-facing subwoofer. In the rear area, on the other hand, the sound pressure is clearly reduced.

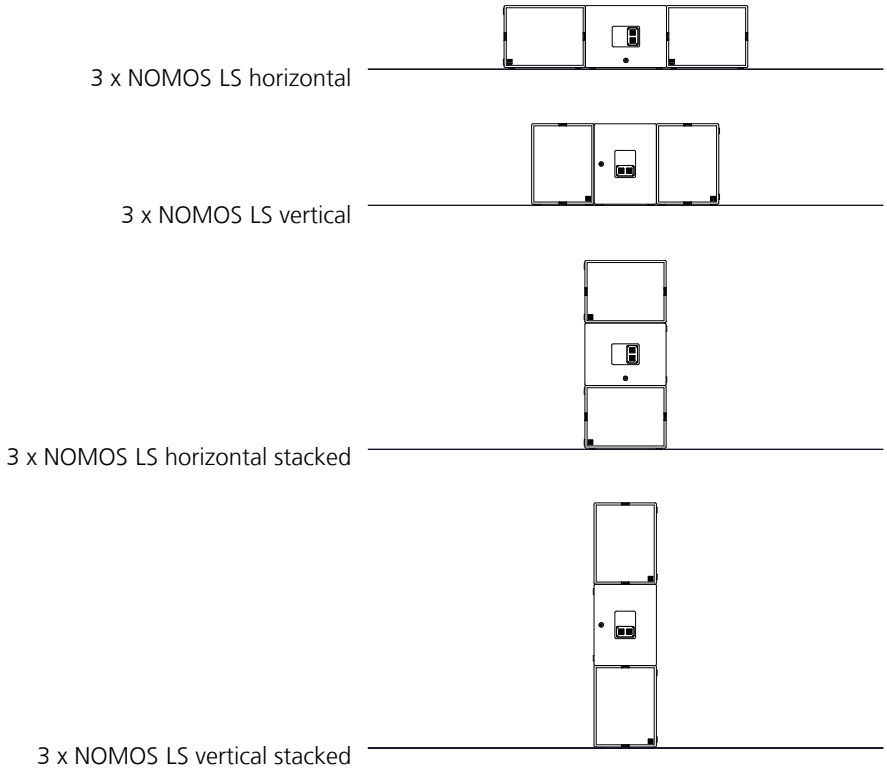
With this, you achieve

- less unwanted sound on the stage
- low feedback
- simplified miking
- improved room acoustics with fewer reflections from the rear and side walls, or – when flown – from the ceiling
- simplified adherence of sound emission limits and therefore less noise disturbance for nearby residential areas during open air events.

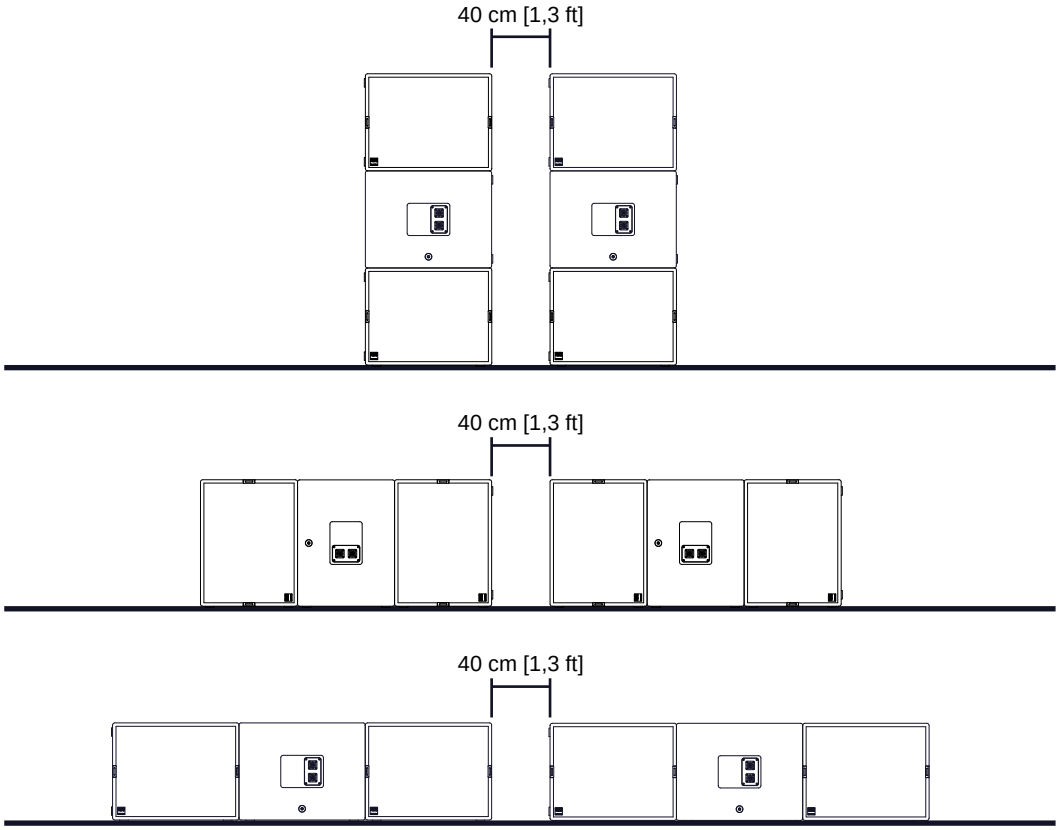
6.2.1 Setup instructions for a cardioid array

To achieve a cardioid pattern, you must always have an array with 3 subwoofers - or a multiple of 3 subwoofers - setup next to one another (3, 6, 9, etc.). In this set of three, the middle one must be rear-facing while both other subwoofers are front-facing.

You can choose from the following options for cardioid and hypercardioid setups:



When cardioid arrays are stacked on the floor, ensure that there is always a distance of at least 40 cm between each unit of 3.



6.2.2 LSBlocks (Controller CD 44) for cardioid use

The rear-facing subwoofer is controlled using the Controller CD 44 via LSBlock for cardioid arrays for rear-emitting subwoofers. The front-facing subwoofers are controlled via LSBlock for cardioid arrays for front-emitting subwoofers. The following cardioid LSBlocks are available in the Controller CD 44:

Operation Mode of the NOMOS LS	Selected LSBlock (Controller CD 44)
'Cardioid Front', front-facing	NOMOS LS C-F
'Cardioid Rear', rear-facing	NOMOS LS C-R

7. Transport and Storage

The NOMOS LS is protected against short-term moisture. It should still be stored, transported, and used under dry conditions, though. The NOMOS LS System is not designed for long-term use in a corrosive environment.

Make sure that the system is adequately ventilated during longer storage periods so that possible residual moisture can escape from the equipment.

Furthermore, you should ensure that the NOMOS LS System is protected from mechanical strain to prevent possible damage.

We recommend using suitable transport and storage cases and the optional soft cover that protects from the above-mentioned influences.

8. Maintenance and Care

Warning

1. For the owner and user, it is mandatory to be aware of the safety relevance of speakers that can be flown.

   It is, therefore, highly essential to carry through meticulous and well-documented maintenance procedures and inspections.

   The NOMOS LS system can exhibit signs of wear over the years, i.e. from mechanical strain, transport damage, corrosion, or improper handling. If speakers are to be flown, this always means there is a high safety hazard.

   As a basic principle, you must visually inspect the NOMOS LS System every time you suspend it and take it down. For fixed installations, you must inspect the speaker for signs of wear at regular intervals.

   During these inspections, you must especially look out for deformations, cracks, dents, damage to threads, and corrosion. Mounting devices such as shackles, chains and wire ropes also have to be checked for signs of wear or deformation carefully.

   If as a result of these checks any uncertainty should arise with regard to safety or if specific faults are found, the NOMOS LS system may no longer be used and you must send in the product to KLING & FREITAG GmbH for inspection and repairs, if necessary.

   The inspection requirements vary depending on application and country of use. Observe the requirements that are relevant for you. If in doubt, contact local authorities.

   In many countries, regular inspection of mounting components and accessories is required. In most cases (e.g. german BGV C1), an additional annual inspection is required that must be done by a technical expert. Additionally, a detailed inspection carried through by a legally certified or official authority is required every four years.

   In this context, it is very important to keep an inspection log book. In this inspection log book, the data for every used accessory is entered at the periodic inspections, making the data available at all times for possible inspections. This book should document maintenance measures and inspection intervals and contain parts lists.

2. The Polyurea synthetic coating used by KLING & FREITAG is impact proof and highly resistant. We recommend using protective coverings or cases to help avoid damaging the paint during i.e. continuous mobile use

3. To replace the filter foam, send the front grille incl. foam to KLING & FREITAG GmbH. Upon payment for expenses, the grille with the new covering will be returned.

9. Technical Specifications

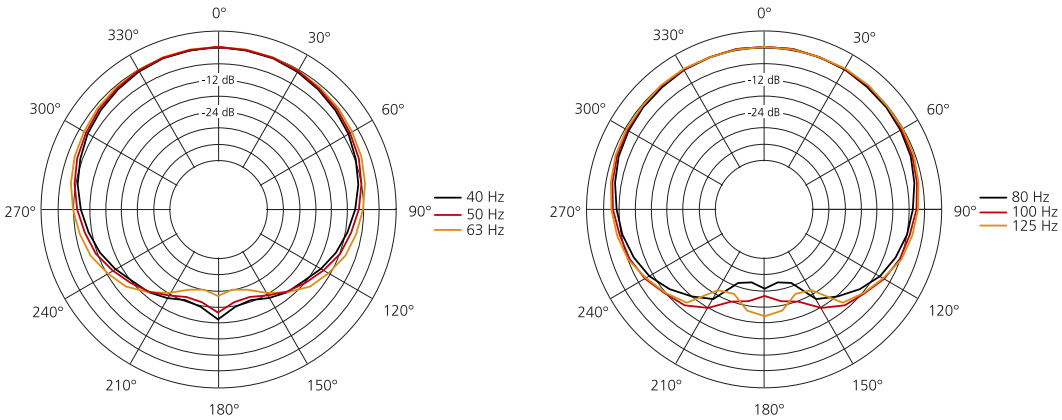
Speaker		
	Design	Bass reflex system (via K&F SystemRack or TOPAS)
	Cut-off frequencies (2-channel mode)	100 Hz
	Lower cut-off frequency (-3 dB / -10 dB)	40 Hz / 33 Hz
	Coverage	Omnidirectional (cardioid configuration in clusters of 3 possible)
	Power handling	400 watts nominial[1)]
		800 watts program[2)]
	Max. SPL	128.5 dB (SPL peak / 1 m / free field)
	Components	15“ Langhubchassis, doppelt zentrierte 75 mm Schwingspule, innen und außen belüftet, geringste Verzerrungen durch Demodulationsring
	Speakers / channel	2
	Wiring	(+1/-1) 2 x Speakon 4-pol NLT4MP IN parallel with OUT
Enclosure Design		
		15mm Multiplex enclosure with highly resistable Polyurea synthetic coating in black, 2 ergonomic handles on the sides, 8 anti-slip rubber feet, 4 stacking grooves for save stackings of identical enclusures, 3 K&F VariPoint® for quick an safe rigging with pin or eyebolt, 2 locking profiles for optional transport cover, ball proof steel grille with black exchangeable acoustic foam behind the grille.
	Dimensions (W x H x D)	565 x 435 x 510 mm
	Weight	25 kg
	Accessories	see catalogue or visit www.kling-freitag.de

1) Pink noise 40 - 250 Hz, 2 h; 2) as 1) but with 50% duty cycle

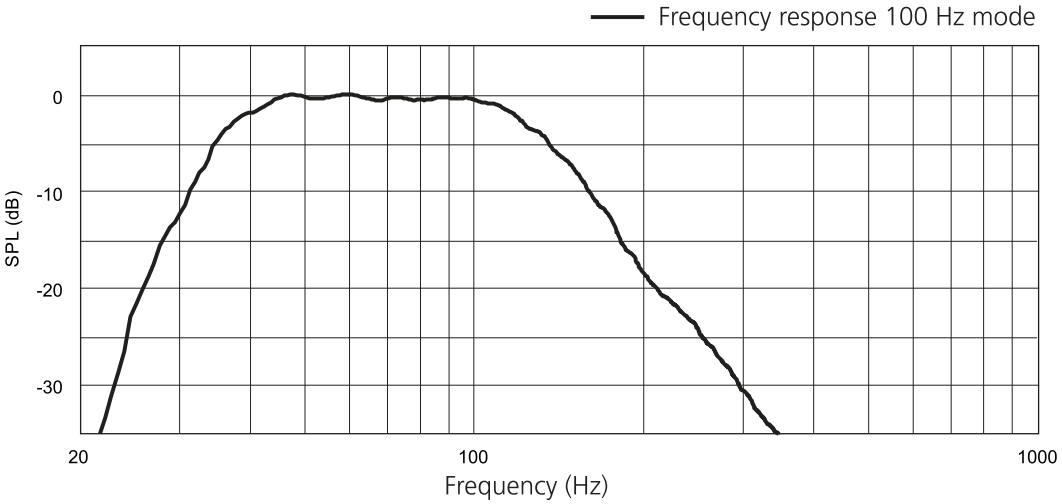
10. Measuring diagrams

Polar Patterns

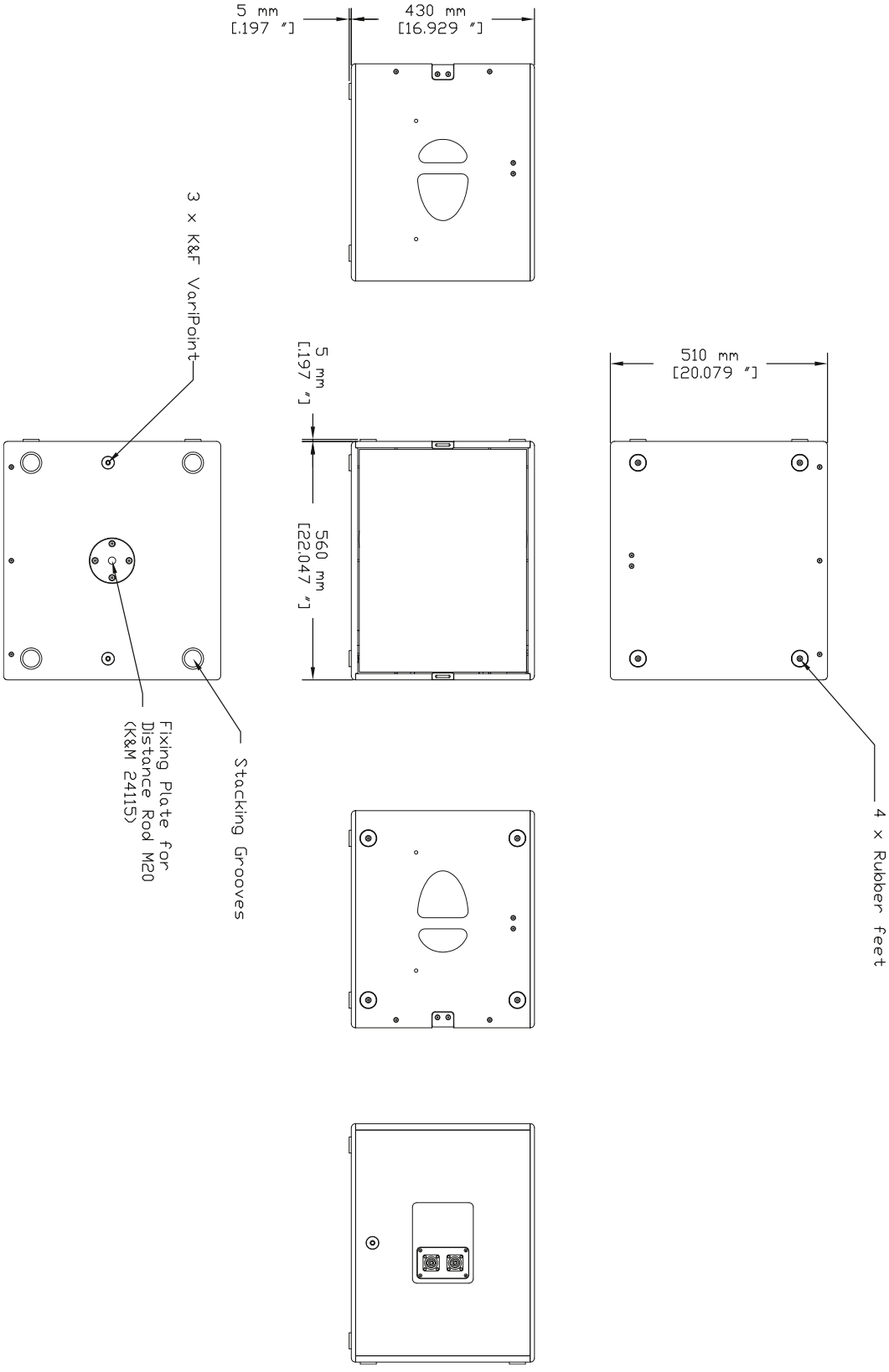
Cardioid



Frequency response



11. Dimensions NOMOS LS



12. Disposal

Please recycle the packaging material of the device.

12.1 Regulations for Disposal

12.1.1 Germany

It is not allowed to dispose of used electrical equipment as domestic waste.

But please do not dispose of them at official collecting points for recycling either!

All KLING & FREITAG products are plain business-to-business (B2B) products. KLING & FREITAG products labelled with a waste bin sign have thus to be disposed of by KLING & FREITAG alone. Please call KLING & FREITAG at the number stated below if you have a KLING & FREITAG product to be disposed of. We will offer you a straightforward and professional disposal with no costs involved.

If there is no waste bin sign on one of your KLING & FREITAG products, because it has been sold before 24 March 2006, then by law the owner is in charge of the disposal. In this case we will be happy to assist and offer you proper ways of disposal.

Telephone number to call about the disposal of used KLING & FREITAG products: +49 (0) 511-96 99 7-0

Explanation: With the ElektroG (law relating to electrical and electronic equipment and appliances) we have complied with the EU-directive on waste electrical and electronic equipment (WEEE, 2002/96/EC).

From 03/24/2006 onwards KLING & FREITAG GmbH has thus labelled all products mentioned in the WEEE with a sign with a crossed out waste bin and a white bar below. This sign indicates that the disposal as domestic waste is prohibited and that the product has been put into circulation on 03/24/2006 at the earliest.

KLING & FREITAG GmbH has been legally registered as a manufacturer with the German registration office EAR. Our WEEE registration number is: DE64110372.

For the German Registration office EAR we have accredited that our products are soleB2B products.

12.1.2 EU, Norway, Iceland, and Liechtenstein

It is not allowed to dispose of used electrical equipment as domestic waste.

From 08/13/2005 onwards KLING & FREITAG GmbH has thus labelled all products for EU-Member countries as well as Norway, Iceland and Liechtenstein (except Germany) mentioned in the WEEE with a sign with a crossed out waste bin and a white bar below. This sign indicates that the disposal on domestic waste is prohibited and that the product has been put into circulation on 08/13/2005 at the earliest.

Unfortunately the European directive WEEE has been complied with implementing different national provisions of law throughout all member countries, which makes it impossible for us to offer consistent solutions for the disposal throughout Europe.

Responsible for complying with these provisions of law is the local distributor (importer) of each country.

For proper disposal of used products in accordance with these local provisions in the mentioned countries of the European Union (except Germany) please ask your local dealer or the local authorities.

12.1.3 All other Countries

For proper disposal of used products in accordance with local provisions in other than the above mentioned countries please ask your local dealer or the local authorities.